

FREE TEACHER and FAMILY RESOURCES for **GRADE 4**



AMERICAN JOURNEYS: Learn About Illinois

In-Class and At-Home Activities



Answers for Trains in Motion:

1. d; 2. a; 3. a; 4. c.

Answers for Assessment Quiz:

1. T; 2. T; 3. F; 4. T; 5. F; 6. F; 7. F; 8. T.

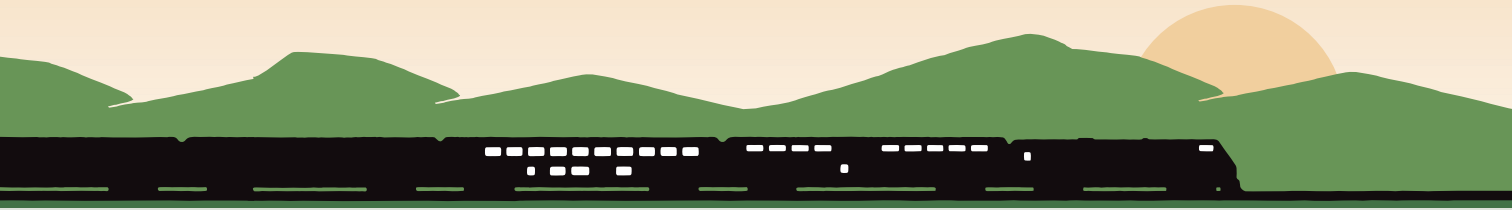
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ALL ABOARD!



This final project will have students use their knowledge about trains and train travel, while broadening their understanding of the United States. They will apply the map skills they've acquired through the lessons in this program.

Student Goals:

Create a travel brochure with a detailed map; present project to classmates and families

Directions:

1. Introduce the final project to the class and welcome your student travel guides to their new jobs.
2. Discuss how it's fun to plan trips. Explain that each student will choose an exciting destination and create a travel brochure. They must decide on the most logical route the train will take, from the train station to the final stop.
3. Allow class time for students to create poster boards with maps that show their train routes. Instruct them to highlight the routes and circle points of interest along the way. Major cities, towns, and geographical features should be labeled.
4. Have each student conduct research about the kind of train he or she would like to recommend (e.g., high-speed, freight, steam engine, or passenger) and the landmarks the train will pass along the way. Let students begin their research in class, and, using the resources below, direct students toward appropriate books and Web sites.
5. Have students create a travel brochure that includes all of their research. Brochures may include a table of contents, photos, maps, directions, etc.
6. Display the poster boards and brochures in the classroom. Let students present their projects during class time, or set up an open house and invite families to your class's "travel information center."

Additional Resources for Student Research:

Books

Dino-Trekking: The Ultimate Dinosaur Lover's Travel Guide by Kelly Milner Halls
Family Fun Vacation Guide: New England
Fun with the Family™ in North Carolina
 by James L. Hoffman
Kids' Guide to Chicago by Jerry L. Nelson, et al.
Kids' Guide to the National Parks of California and Oregon by Jenna M. Sullivan and Laura C. Sullivan
New Mexico Family Adventure Guide™
 by Catherine Coggan
Storied City: A Children's Book Guide to New York City
 by Leonard S. Marcus
United States of America: A State-by-State Guide
 by Millie Miller and Cyndi Nelson
Where the Trains Are!: Wonderful North American Train Attractions for Kids of All Ages by Heather R. Taylor

Web sites

www.amtrak.com
 Train schedules and descriptions of destinations throughout the United States
www.mapquest.com
 Step-by-step directions and travel information
www.about.com
 Information about popular destinations throughout the country
www.fodors.com/familytravel
 Descriptions of popular family trips
www.trainweb.com
 Information and photographs of trains, train stations, and railroad museums



TRAINS IN MOTION

Student Name: _____

Read this situation below and answer the questions at the bottom of the page.

Mrs. Jones's 4th grade class is investigating energy and the motion of diesel trains. They want to understand the factors that help trains move on the tracks. The students begin their class with research and record the following facts:



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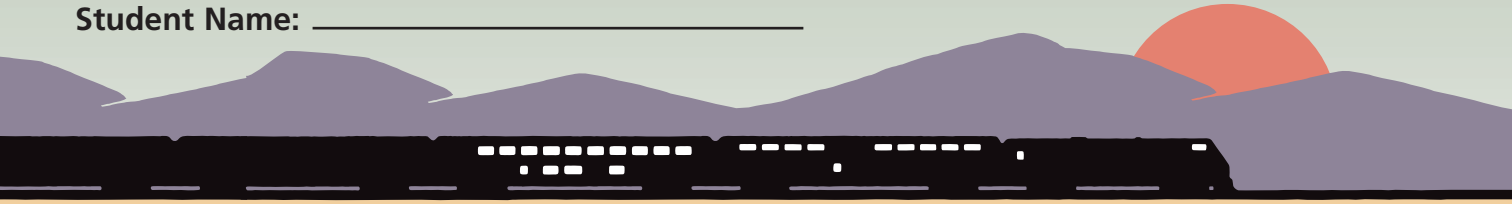
Diesel Train Profile

- **Trains have eight wheels made of steel, rather than rubber, to reduce rolling friction** (*the friction or force that occurs when an object rolls; rubber has a bigger rolling friction than steel*).
- **Train engines are efficient; they use an average of 1.5 gallons of diesel fuel per mile when towing about five passenger cars.** The fuel tank can hold up to 2,200 gallons of fuel.
- **Trains operate on an electrical system of 8-volt batteries (each battery weighs more than 300 lb.), which provide power to start the engine.**
- **Locomotive wheels have built-in automatic spray nozzles that shoot sand onto the tracks when necessary.** This helps increase the **traction** (*the gripping power that keeps a moving body from slipping on a surface*) when the wheels slip or the engine makes an emergency stop.

1. What type of power is applied to a train to make it move?
a) geothermal c) solar
b) hydropower d) electrical
2. A train is traveling 70 mph on a straight course. It rapidly decelerates to 10 mph as it approaches its destination, because the engineer needs to make an emergency stop. Do the spray nozzles release sand?
a) Yes, because the train makes a sudden stop
b) No, because the train is traveling on a straight path
c) No, because the train does not come to a quick stop
d) Not enough information
3. A train's wheels determine how much force it takes to pull the train at a constant speed. If a train had wheels made of rubber instead of steel, which answer would best describe the amount of time needed to complete the trip?
a) longer c) same
b) shorter d) no difference
4. If a train travels 150 miles in one direction without stopping, how much fuel will it have left for the return trip?
a) 2,075 gal. c) 1,975 gal.
b) 200 gal. d) 1,200 gal.

ASSESSMENT QUIZ

Student Name: _____



You have followed train routes on a map, written a narrative about train travel, and conducted research about trains. Quiz yourself to see what you have learned.

Directions: Circle “**T**” if the statement is True. Circle “**F**” if the statement is False.

- | | | |
|--|----------|----------|
| 1. Illinois is bordered by five states: Iowa, Missouri, Wisconsin, Indiana, and Kentucky. | T | F |
| 2. You will travel across the Mississippi River if traveling by train from Chicago to St. Louis, MO. | T | F |
| 3. If traveling from Joliet to Alton you will pass wheat fields, cornfields, and national forests. | T | F |
| 4. A train’s speed is affected by the type of wheels it has. | T | F |
| 5. Trains are powered by solar energy. | T | F |
| 6. Engineers regularly spray the train tracks with sand to improve traction. | T | F |
| 7. The population of Chicago is smaller than the populations of Macomb and Lincoln combined. | T | F |
| 8. There is a higher percentage of women than men in Illinois. | T | F |

Bonus! What is your favorite fact that you have learned about trains and train travel?

